



Short Note

Dancing to the message: African clawless otter scent marking behaviour

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Abstract

Latrine use and behaviour at latrines have been studied in numerous otter species, but not African clawless otters, *Aonyx capensis*. We set up trail cameras at two latrines near Dullstroom, South Africa. On several occasions, we observed *Aonyx capensis* performing scent marking behaviours that included body rubbing on a bare patch of ground and deposition of anal secretions while “jiggle dancing”. Although body rubbing has been documented in this species, it has not been associated with scent marking, while “dancing” during scent marking has not been reported. Given the context of these observations, we speculate that the main function of scent marking behaviour in African clawless otters is likely related to inter-clan territorial marking.

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The use of latrines – the frequent utilization of the same area for defecation/urination (Irwin et al., 2004) – is well documented within the Class Mammalia (Gorman and Trowbridge, 1989). Latrines serve as sites of intraspecific communication where scent marks, consisting of faeces, urine and/or scent gland secretions, can convey information (Macdonald, 1980; Gorman and Trowbridge, 1989). Such scent marks can provide information that reflect resource use (Stewart et al., 2001), habitat quality and suitability (Ben-David et al., 2005), and territory (Gorman, 1990). Consequently, scent marks maintain spacing and territorial borders between conspecifics (Kruuk, 1978; Stewart et al., 1997) and serve as a means of mate defence (Roper et al., 1986).

Carnivore behaviour at latrines has been studied in a number of species including European badgers, *Meles meles* (Stewart et al., 2001), ferrets, *Mustela furo* (Clapperton, 1989), and North American river otters, *Lontra canadensis* (Green et al., 2015). Green et al. (2015) described and quantified the behaviour of river otters at latrines and found evidence that latrines were used for olfactory communication. These authors observed and described a number of different behaviours that included, but are not limited to, sniffing, defecation, body rubbing against the ground, self-grooming, digging, stomping and wrestling. Coastal populations of this species additionally use latrines as meeting places, influencing the populations' social structures (Barocas et al., 2016). The behaviour of giant otters, *Pteronura brasiliensis*, at latrines has also been studied and behaviours such as body rubbing against the ground, fore-paw rubbing against vegetation, tree trunks or shrubs and defecation/urination were reported (Leuchtenberger and Mourão, 2009).

African clawless otter, *Aonyx capensis*, behaviour at latrines is less well studied with only one behavioural record that we know of. Based on the discovery of signs suggestive of rubbing against ground near latrines, Rowe-Rowe (1978) suggested that grooming and drying (through body rubbing) sometimes takes place at latrines. The aim of this short study was to record and describe the behaviours of African clawless otters at latrines.

During the period from February to May 2016, trail cameras (Bushnell Trophy Cam HD Essential) were placed at two latrine sites on Millstream Farm near Dullstroom, South Africa. Two cameras were placed at latrine A and one at latrine B. Both latrines were located between two different dams, with latrine A located in thick, shrubby vegetation and latrine B in an open area with a sparse covering of medium height grass. Both latrines were approximately 30 m from the closest dam and were found after following well-worn pathways between the two dams. There was a straight line distance of 750 m between the two latrines. Otter activity at the latrines was confirmed by the presence of spraints (otter faeces) and strong odour. Cameras were placed in strategic positions in order to cover the entire area of the latrine and were programmed to take a 10 s video recording when triggered, followed by a 2 s period of inactivity before being able to be triggered again.

The trail cameras recorded African clawless otters visiting latrine A on eight occasions and latrine B on 15 occasions during the study period. During these visits, the otters were recorded displaying previously unrecorded behaviour for this species whilst scent marking. The first behaviour (“jiggle dance”) took place during two of the visits to latrine A and during one visit to latrine B. At latrine A, on the first occasion (27th of February), three otters were recorded initially sniffing the latrine area followed by two of the otters secreting anal jelly (gelatinous secretion from the anal scent glands) on ground-cover vegetation (e.g. grasses) (Supplement S01). Whilst secreting this jelly, both otters moved their posteriors from side to side while sequentially stomping their hind legs (less than 0.5 s between each stomp) and moved forward before turning 180° in a clockwise direction to complete a semi-circle (Fig. 1). This was followed by a second secretion where one of the otters excreted and scent marked on a tuft of grass (Fig. 2) (Sup-

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Figure 1 – Freeze-frames taken from a video where the “jiggle” dance was performed. During this dance posteriors were moved from side to side whilst hind legs were stomped. A) Back right leg is raised and tail is to the right. B) Left back leg is raised and tail is moving to the left. Behaviours described in A and B were repeated several times and continued for approximately 8 s.

plement S02). This second secretion was completed without moving their posteriors from side to side, but while still stomping their hind legs. On the second occasion (24th of March), three otters were recorded at the latrine. Two of these otters also moved their posteriors from side to side and stomped their hind legs as described above. However, this time spraints were evidently excreted and no anal jelly secretions were observable (Supplement S03). At latrine B (16th of May), four otters visited the latrine and all four were recorded initially sniffing the area followed by all four secreting spraint and anal jelly whilst stomping and moving their posteriors from side to side as described above (Supplement S04; Supplement S05).

The second recorded behaviour – body rubbing – took place during five of the eight visits by otters to latrine A (24th and 27th of February and 3rd, 4th and 8th of March). During these visits, otters were recorded scent marking by body rubbing and rolling on a bare patch of ground. The side of the head, throat and neck appeared to be the body parts of main focus while rubbing, rolling and back rubbing were also recorded (Supplement S06; Supplement S07; Supplement S08; Supplement S09; Supplement S10). Otters mostly used bare ground, but tufts of grass close to the bare ground were also used as a rubbing area. On four occasions, three otters visited latrine A and all three otters performed this scent marking behaviour, while only one otter scent marked on the fifth occasion (Supplement S09). These three otters were always in close proximity to one another and often moved over and under each other when displaying body rubbing behaviour.

Anal jelly secretions are well documented in otters (Ben-David et al., 2005; Leuchtenberger and Mourão, 2009; Green et al., 2015), but what is significant about these observations is the manner in which the secretions were made. Before and during the secretions a “jiggle dance” was performed, independently, in pairs and in groups, where hind legs were stomped and posteriors were moved from side to side. Stomping behaviour has been observed in *A. capensis* (Somers, 1997) and described in *L. canadensis* (Green et al., 2015). However, such behaviour was not associated with jelly secretion or defecation in *A. capensis* and only associated with defecation in *L. canadensis*. Our observations confirm foot stomping behaviour in *A. capensis* and associate this with the secretion of anal jelly in some instances, as well as spraints.

Body rubbing has been observed and documented in *P. brasiliensis* (Leuchtenberger and Mourão, 2009), and in *L. canadensis* (Green et al., 2015) and suggested to play a role in scent marking in both studies. Evidence of body rubbing has been observed in *A. capensis*, but the reason for this was hypothesised to be drying (Rowe-Rowe, 1978). Evidence obtained from this study showed *A. capensis* displaying solitary and social body rubbing at a latrine which resulted in a strong odour (different to spraint odour) at the latrine, which remained for several days following the rubbing (R.K. Jordaan pers. obs.). This suggests that the body rubbing by *A. capensis* described here was a means of scent marking not previously documented in this species.

Potential functions of the scent marking behaviours reported here may include territory defence and maintenance, resource or mate defence, sharing of information about resource availability, and/or orientation (Gosling and McKay, 1990; Buesching and Jordan, in press). Kruuk (1992) suggested that European otters, *Lutra lutra*, do not use scent marking to demarcate territories, but rather to space individuals



Figure 2 – Freeze-frames taken from a video of the secretion event where scent marking was focussed on a single tuft of grass. A) Otter approaches tuft of grass and begins “jiggle dance” where hind legs are stomped and posterior is moved from side to side. B) “Jiggle dance” continues and excretion takes place with the second otter moving past. C) “Jiggle dance” continues while second otter starts rolling. D) “Jiggle dance” is terminated and otter leaves and starts rolling with the second otter. This scent marking behaviour continued for approximately 9 s.

as a means to increase foraging efficiency. Our observations suggest that terrestrial movements in *A. capensis* often take place in groups and/or clans of individuals, thereby suggesting an unlikely role for scent marking in intra-clan communication. Intra-clan communication however cannot be excluded, as important information such as reproductive status is often conveyed through scent marking (Hutchings and White, 2000). We therefore suggest that the most likely functions of the behaviours reported here are associated with the marking and defence of clan territories (Arden-Clarke, 1986). However, our observations do not preclude alternative or cumulative functions that may include intra- or inter-clan communication related to resource availability (Prenda and Granadolorencio, 1996; Rostain et al., 2004) and reproductive status (Buesching and Jordan, in press).

References

- Arden-Clarke C.H.G., 1986. Population density, home range size and spatial organization of Cape clawless otter, *Aonyx capensis*, in a marine habitat. *J. Zool.* 209: 201–221.
- Barocas A., Golden H.N., Harrington M.W., McDonald, D.B., Ben-David M., 2016. Coastal latrine sites as social information hubs and drivers of river otter fission–fusion dynamics. *Anim. Behav.* 120: 103–114.
- Ben-David M., Blundell G., Kern J., Maier J., Brown E., Jewett S., 2005. Communications in river otters: creation of variable resource sheds for terrestrial communities. *Ecology* 86: 1331–1345.
- Buesching C.D., Jordan N.R., in press. The function of carnivore latrines: review, case studies and a research framework for hypothesis-testing. In: E. Do Linh San, J.J. Sato, J.L. Belant, Somers, M.J. (Eds.) *Small Carnivores: Evolution, Ecology, Behaviour and Conservation*, Wiley-Blackwell, Oxford.
- Clapperton B.K., 1989. Scent-marking behaviour of the ferret, *Mustela furo* L. *Anim. Behav.* 38: 436–446.
- Gorman M.L., 1990. Scent marking strategies in mammals. *Rev. Suisse Zool.* 97: 3–29.
- Gorman M., Trowbridge B., 1989. The role of odor in the social lives of carnivores. In J. Gittleman (Ed.) *Carnivore Biology, Ecology and Evolution*. Chapman & Hall Ltd, New York. 57–139.
- Gosling L.M., McKay H.V., 1990. Competitor assessment by scent marking: an experimental test. *Behav. Ecol. Sociobiol.* 26: 415–420.
- Green M.L., Monick K., Manjerovic M.B., Novakofski J., Mateus-Pinilla N., 2015. Communication stations: cameras reveal river otter (*Lontra canadensis*) behaviour and activity patterns at latrines. *J. Ethol.* 33: 225–234.
- Hutchings M.R., White P.C.L., 2000. Mustelid scent-marking in managed ecosystems: implications for population management. *Mammal Rev.* 30: 157–169.
- Irwin M.T., Samonds K.E., Raharison J.-L., Wright P.C., 2004. Lemur latrines: observations of latrine behaviour in wild primates and possible ecological significance. *J. Mammal.* 85: 420–427.
- Kruuk H., 1978. Spatial organisation and territorial behaviour of the European badger (*Meles meles*). *J. Zool.* 184: 1–19.
- Kruuk H., 1992. Scent marking by otters (*Lutra lutra*): signaling the use of resources. *Behav. Ecol.* 3: 133–140.
- Leuchtenberger C., Mourão G., 2009. Scent-marking of giant otter in the southern Pantanal, Brazil. *Ethology* 115: 210–216.
- Macdonald D.W., 1980. Patterns of scent marking with urine and faeces amongst carnivore communities. *Symp. Zool. Soc. Lond.* 45: 107–139.
- Prenda J., Granadolorencio C., 1996. The relative influence of riparian habitat structure and dish availability on otter *Lutra lutra* L. sprinting activity in a small Mediterranean catchment. *Biol. Cons.* 76: 9–15.
- Roper T.J., Shepherdson D.J., Davies J.M., 1986. Scent marking with faeces and anal secretion in the European badger. *Behaviour* 97: 94–117.

- Rostain R.R., Ben-David M., Groves P., Randall, J.A., 2004. Why do river otters scent-mark? An experimental test of several hypotheses. *Anim. Behav.* 68: 703–711.
- Rowe-Rowe D.T., 1978. Biology of the two otter species in South Africa. *Otters: Proceedings of the First Working Meeting of the Otter Specialist Group Morges IUCN*. 130–139
- Somers M.J., 1997. Cape clawless otter *Aonyx capensis*. In: M.G.L. Mills and L. Hess (Eds.). *The Complete Book of Southern African Mammals*. Struik Publishers. 200–201
- Somers M.J., Nel J.A.J., 2004. Movement patterns and home range of Cape clawless otters (*Aonyx capensis*), affected by high food density patches. *J. Zool.* 262: 91–98.
- Stewart P.D., Macdonald D.W., Newman C., Cheeseman C., 2001. Boundary faeces and matched advertisement in the European badger (*Meles meles*): a potential role in range exclusion. *J. Zool.* 255: 191–198.
- Stewart, P.D., Anderson, C., Macdonald, D.W., 1997. A mechanism for passive range exclusion: evidence from the European badger (*Meles meles*). *J. Theor. Biol.* 184: 279–289.

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Supplemental information

Additional Supplemental Information may be found in the online version of this article:

Supplement S01–S10 Video recorded by camera trap.